DESCRIPTIONS

OF

NEW SPECIES OF FOSSILS.

BY

R. P. WHITFIELD.

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Genus CREPICEPHALUS, *Owen.*

CREPICEPHALUS (LOGANELLUS) MONTANENSIS, n. sp.

Plate 1, figs. 1 and 2.

Glabella and fixed cheeks, when united, subquadrangular in outline, contracted across the eyes, and abruptly expanding in front. Glabella narrowly conical, moderately tapering anteriorly, somewhat squarely truncate in front, strongly elevated, and gibbous in the middle and along the central line, marked by three pairs of lateral furrows, which are directed obliquely backward at their inner ends; anterior pair very short, and placed near the anterior end of the glabella. Occipital furrow only moderately strong. Fixed cheek rather narrow, not exceeding one-third the width of the glabella. Eye-lobes proportionally large. Frontal limb long, equaling half the length of the glabella. No perceptible anterior rim can be detected on the part preserved. Ocular ridges distinct. Posterior lateral limbs long and narrow, their lateral extension about equal to the width of the glabella.

The species is known only by the glabella and fixed cheeks, the latter imperfect; but the form is so unlike any other of the genus described that there can be no difficulty in recognizing it. The extreme elevation of the glabella is a marked feature.

Locality and formation.—In limestone of the Potsdam Group overlying quartzite near Camp Baker, Montana.

Genus ARIONELLUS, *Barrande.*

ARIONELLUS TRIPUNCTATUS, n. sp.

Plate 1, figs. 3-5.

Specimens consisting only of the central parts of the head and separated movable cheeks.

Glabella conical, the height above the occipital furrow equal to the greatest width at the furrow; anterior end rounded, as wide as two-thirds of the length above the occipital furrow; margins defined by strong, well-defined dorsal furrows; surface moderately convex, and very faintly angular along the median line; marked by three pairs of very faint lateral furrows, which are directed obliquely backward at their inner ends; occipital furrow deep, extending entirely across the base of the head; occipital ring moderately strong, and projecting backward in a central spine of undetermined length.

Fixed cheeks narrow and prominent, but rapidly sloping to the margins in front of the small, prominent and somewhat pointed palpebral lobes. Frontal limb short, rapidly narrowing at the sides, in front of the eyes, to the anterior furrow, which is deep and strong; anterior to the furrow the limb is suddenly contracted and subangular in the middle; bottom of the furrow marked between the sutural margins by three deep well-marked pits. Postero-lateral limbs narrow at their origin, beyond which they are unknown.

*The types of all the species here described are in the Peabody Museum of Yale College, New Haven, Conn.

Facial sutures directed forward on a line with the eye for a short distance, when they are directed inward with a strong curvature to the anterior furrow, in front of which they converge more rapidly, and, meeting in the median line, give an angular form to the frontal limb when the movable cheeks are absent. Movable cheeks subtriangular, exclusive of the posterior spine; central area convex; marginal rim strongly rounded and gradually widening from the front, posteriorly to the origin of the spine, which is of moderate strength, and as long as the glabella and frontal limb of the head. Surface of the movable cheeks covered with strong granules. The glabella and fixed cheeks have been similarly marked; judging from the pustulose surface of the cast of these parts. Thorax and pygidium unknown. The surface-structure, together with the well-marked pits in the frontal furrow, will serve to distinguish this from any other known species.

Formation and locality.—In limestones of the Potsdam Group; at Moss Agate Springs near Camp Baker, Montana.

Genus GRYPHÆA, *Lam.*

GRYPHÆA PLANOCONVEXA, n. sp.

Plate 2, figs. 9 & 10.

Shell of medium size; general outline more or less orbicular, or with a straightened cardina margin; transverse section planoconvex. Lower valve more or less rounded, often quite ventricose, but sometimes depressed-convex; beak small and narrow-pointed or truncate, usually somewhat twisted, projecting slightly beyond the line of the hinge, and often incurved close to the cardinal border. Upper valve flat or slightly concave, smaller than the other. Ligamental area of the lower valve small; cartilage-groove narrow. Muscular imprints reniform, eccentric. Substance of the shell rather thin and nacreous; surface roughly lamellose.

The form of the shell as seen in several individuals strongly resembles that of an *Anomia;* but on splitting open one of the specimens, it revealed the features of a *Gryphæa.* The general form and characters are so distinct from any known species from rocks of Jurassic age that it may be readily recognized.

Formation and locality.—In rocks of Jurassic age in the Bridger Mountains, Montana; associated with *Camptonectes bellitriata. C. extenuatus, Gervillia erecta* M. & H., and *Pleuromya subcompressa* = *Myacites* (*Pleuromya*) *subcompressa* Meek.

Genus GERVILLIA, *Defrance.*

GERVILLIA SPARSALIRATA, n. sp.

Plate 2, fig. 8.

Shell small, much below a medium size, very oblique, and rather slender; the axis of the body of the shell forming an angle of not more than twenty to twenty-two degrees with the cardinal line. Anterior wing not determined, but apparently very small or obsolete; posterior wing proportionally long and narrow, the surface flattened and the outer angle very obtuse; body of the shell convex, the left valve much the most rotund, scarcely or not at all curved in its direction. Anterior margin slightly convex; basal margin rounded. Surface of the left valve marked by about five comparatively strong radii, with wider interspaces, those along the middle of the valve strongest and most distant; also by well marked, crowded, concentric lines, which are more distinct in crossing the radii than between, and on the posterior wing are directed toward the hinge in an almost direct line. Right valve less convex than the left and the markings less distinct.

This species somewhat closely resembles *G. montanensis* Meek (Geol. Surv. of the Territ's, 1872, p. 472), but differs very materially in the smaller angle formed by the body of the shell with the hinge-line, and also in the greater length of the hinge. It is possible it may be only a strongly marked variety of that species, but this can only be satisfactorily determined by more and better specimens. At present, however, it seems impossible to identify it with that one.

Formation and locality.—In rock of Jurassic age at Bridger Mountains, Montana; associated with characteristic fossils of that formation.

Genus MYALINA, *De Koninck.*

MYALINA? (GERVILLIA) PERPLANA, n. sp.

Plate 1, fig. 8.

Shell rather above a medium size and erect, elongate quadrangular in outline, with a rounded basal margin; anterior and posterior borders subparallel, slightly diverging from the cardinal margin toward the basal line, which is rather sharply rounded; height of the shell nearly or twice as great as the greatest length in an anterior and posterior direction, and the cardinal border nearly two-thirds as long as the greatest length of the shell. Surface of the left valve very depressed-convex, the anterior umbonal ridge being low and rounded a little within the anterior margin of the shell; beak small, compressed, not projecting beyond the hinge-line. Surface marked by low rounded undulations, on the body of the shell, parallel with the lines of growth, which become sharper thread-like lines along the postero-cardinal border.

The depressed and flattened shell, with the subparallel margins and erect form, will readily serve to identify the species. It is possible that the species may prove to be more nearly related to the genus *Gervillia* than to *Myalina* on the examination of other and better specimens; the surface-lining of the shell very closely resembles species of that genus, and the posterior wing is somewhat unlike *Myalina*, while its erect form is quite unlike *Gervillia*.

Formation and locality.—In rocks of Jurassic age at Bridger Mountains, Montana; associated with well-known Jurassic fossils.

Genus PINNA, *Linn.*

PINNA LUDLOVI, n. sp.

Plate 1, figs. 6 and 7.

Shell elongate-triangular, very gradually increasing in width from the beaks toward the base; the dorsal and byssal margins diverging at an angle of but little more than twenty degrees. Dorsal margin straight, as long as, or longer than the body of the shell; basal margin, judging from the lines of growth, nearly at right angles to the dorsal margin for a short distance, then directed, with a rapidly increasing curvature, to the byssal border. Apex and umbones unknown. Surface of the valves angularly convex, the left one the most ventricose, and the angularity quite perceptible. Both valves are marked, except for a narrow space along the byssal margin, by numerous, very distinct, and somewhat flexuous radiating ribs, strongest in the middle of the shell, and decreasing in strength toward each margin; about twenty-two to twenty-four of the ribs may be counted across the middle of the shell on the specimen figured, most of which are marked along the middle by a distinctly-depressed line. Concentric lines distinctly marked and often forming undulations in crossing the radii. Evidence of minute, scattered, spine-like projections exists upon the surface of the radii. Transverse section across the closed valves angularly elliptical; the relative diameters about as one and two.

The strongly-radiated surface and duplicated ribs are features that will readily distinguish this from other described species.

Formation and locality.—In limestones of the Coal Measures, in the cañon of the Musselshell, Montana.

Genus TAPES, *Mühlf.*

TAPES MONTANENSIS, n. sp.

Plate 2, figs. 1 and 2.

Shell small, transversely elongate-elliptical, the length being a little more than twice as great as the height; valves very depressed-convex; beaks subcentral, a little nearer the anterior end, very depressed and inconspicuous, scarcely rising above the general slope of the cardinal border; extremities sharply rounded, the anterior end broadest; basal margin broadly rounded, but a little more arcuate than the cardinal border. Surface of the shell smooth, and presenting the appearance of having been polished, with scarcely perceptible lines of growth.

We know of no described fossil shell very closely resembling this one. *T. Wyomingensis* Meek is perhaps the most closely related, but differs conspicuously in the position of the beaks, which, in that one, are situated only about one-fourth of the length from the anterior end, while in this they are nearly central.

Locality and formation.—In Cretaceous strata near the mouth of the Judith River, Montana, in beds apparently overlying the Fort Pierre shales.

Genus MACTRA, *Linn.*

MACTRA MAIA, n. sp.

Plate 2, fig. 5.

Shell small, subtriangular in outline, with moderately convex valves. Anterior and posterior cardinal slopes nearly equal, the anterior side a little the longest and less abrupt; concave between the beak and the anterior end, while the posterior margin is convex. Anterior extremity narrow, rather strongly rounding upward from the basal margin; posterior extremity subangular; basal line very convex, slightly emarginate just within the posterior angle; beak short, broad, and obtusely pointed, the apex minute, curving, and closely appressed. Body of the shell somewhat regularly convex from beak to base, marked by a strong, subangular, posterior umbonal ridge, behind which the shell slopes abruptly to the margin, and just within which there is a very faintly depressed sulcus extending from below the umbo to the basal line. Anterior umbonal ridge rounded and abrupt.

The specimen from which the description is taken is a partial cast, so that the surface is not perfectly seen; it appears, however, to have been nearly smooth, or with only fine lines of growth. The hinge characters are not clearly made out; the posterior lateral tooth, however, is seen to be long and slender, reaching nearly one-half of the distance between the beak and postero-basal angle. The pallial sinus is somewhat rounded, slightly directed upward, and extends nearly to, or more than one-third of the length of the shell from the posterior end.

This species is very similar in general expression to *M. incompta* White, MS., but differs in being longest anterior to the beaks, while the reverse is the case with that species.

Formation and locality.—In beds of the Cretaceous formation believed to overlie the Fort Pierre shales near the mouth of the Judith River.

Genus SANGUINOLARIA, *Lam.*

SANGUINOLARIA OBLATA, n. sp.

Plate 2, figs. 3 and 4.

Shell small, transversely broad-elliptical or suboval, widest anterior to the middle of the length, where the width is equal to about two-thirds of the length; extremities broadly rounded, the posterior one most sharply curved; basal margin strongly rounded, most abruptly so anterior to the middle of its length; cardinal margin much less strongly rounded than the basal border, slightly contracted posterior to the beaks, which are small, compressed, and but slightly projecting beyond the cardinal border. Surface of the left valve very depressed-convex, most strongly curved across the shell from beak to base, and, judging from the form, has been more convex than the right valve; posterior end marked by a very faint sulcus passing from behind the beaks to the postero-cardinal margin.

Surface of the shell marked by fine concentric undulations and finer lines of growth.

Formation and locality.—In sandy limestone of Cretaceous age near the mouth of the Judith River, overlying the Fort Pierre shales.

Genus THRACIA, *Leach.*

THRACIA (CORIMYA) GRINNELLI, n. sp.

Plate 2, figs. 6 and 7.

Shell of medium size, transversely broad suboval, nearly equilateral, slightly inequivalve, and apparently a little gaping posteriorly. Basal margin of the shell forming a regular elliptical curve

between the points of greatest length; dorsal margin less regular than the basal, slightly contracted behind the beaks; anterior side somewhat rapidly sloping for two-thirds of the distance between the beaks and anterior extremity; extremities sharply rounded, a little less abruptly above than below the middle of the height. Beaks of moderate size, rather broad, slightly projecting above the cardinal line, that of the right valve the largest and extending beyond the left. External ligament small, prominent, and situated close behind the beaks.

Surface of the valves moderately convex, and apparently a little bent in an anterior and posterior direction; the left valve being the most convex. (This is the opposite from what is usually the case.) Valves marked by distinct but irregular and somewhat crowded concentric undulations, and also by a slightly depressed, oblique, somewhat curving sulcus extending from behind the beaks to the postero-basal border, which it scarcely modifies. Internal features and hinge-structure unknown.

The shell bears considerable resemblance to *Thracia Prouti* Meek and Hayden (= *Tellina Prout* M. & H., Proc. A. N. S. Phil., vol. 8, p. 82), but is less contracted posterior to the beaks, and the dorsal margin slopes more rapidly anteriorly, the shell being less full and rounded on this part; the beaks are also larger, and project above the cardinal line more than in that one; the basal line is also more regularly curved, that one rounding upward more strongly in front and less so behind, giving a straighter postero-basal margin.

Formation and locality.—In rocks of Cretaceous age at the mouth of the Judith River, Montana, which overlie the Fort Pierre shales of that locality.

Genus VANIKOROPSIS, Meek.

VANIKOROPSIS TOUMEYANA.

Plate 2, figs. 11–13.

Natica Toumeyana, M. & H., Proc. A. N. S. Phil., vol. viii, p. 270, 1856.
Naticopsis? Toumeyana, M. & H., ib., vol. xii, p. 423.—Meek, Smithsonian Check-List, Invert. Foss., p. 18, 1864.
Vanikoropsis Toumeyana, Meek, Pal. U. S. Geol. Surv. Territ., p. 332, pl. 39, fig. 2.

Shell rather large, naticoid in form, subglobose and a little oblique, composed of about four very ventricose, but not inflated volutions; spire short, depressed, conical, the slope of the spire inclosing an angle of about one hundred and five degrees; suture-line deep and well pronounced; body-volution forming more than two-thirds of the entire height of the shell; aperture broadly oval, rounded, and very slightly extended below, a little straightened on the columellar side, and slightly modified above by the preceding volution; columellar lip thickened and spreading on the body of the preceding volution, and covering but not concealing the umbilicus, or forming a true callus. Umbilicus small and deep.

Surface of the two outer volutions marked by strong, transverse undulations, or ridges, parallel to the margin of the aperture, and numbering about fifteen on the outer whorl; also, by coarse, revolving bands which cross the undulations and have slightly flattened interspaces; four of the bands occupying the space of about one-fourth of an inch on the middle of the outer volution. Substance of the shell very thick and solid.

When describing this species, we had supposed it to be entirely new, not having recognized it in the description of the imperfect individual used by Mr. Meek; but, on seeing his figure above cited, we suspect it may only be a more strongly marked individual of that species, and, although no direct comparison has been made, we do not hesitate to consider it in that light. It differs, however, in being more elevated and in the stronger vertical folds.

Formation and locality.—In beds of Cretaceous age overlying the Fort Pierre shales near the mouth of the Judith River, Montana.

EXPLANATION OF PLATE I.

CREPICEPHALUS (LOGANELLUS) MONTANENSIS.

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ARIONELLUS TRIPUNCTATUS.

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PINNA LUDLOVI.

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MYALINA (GERVILLIA) PERPLANA.

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GRYPHÆA PLANOCONVEXA.

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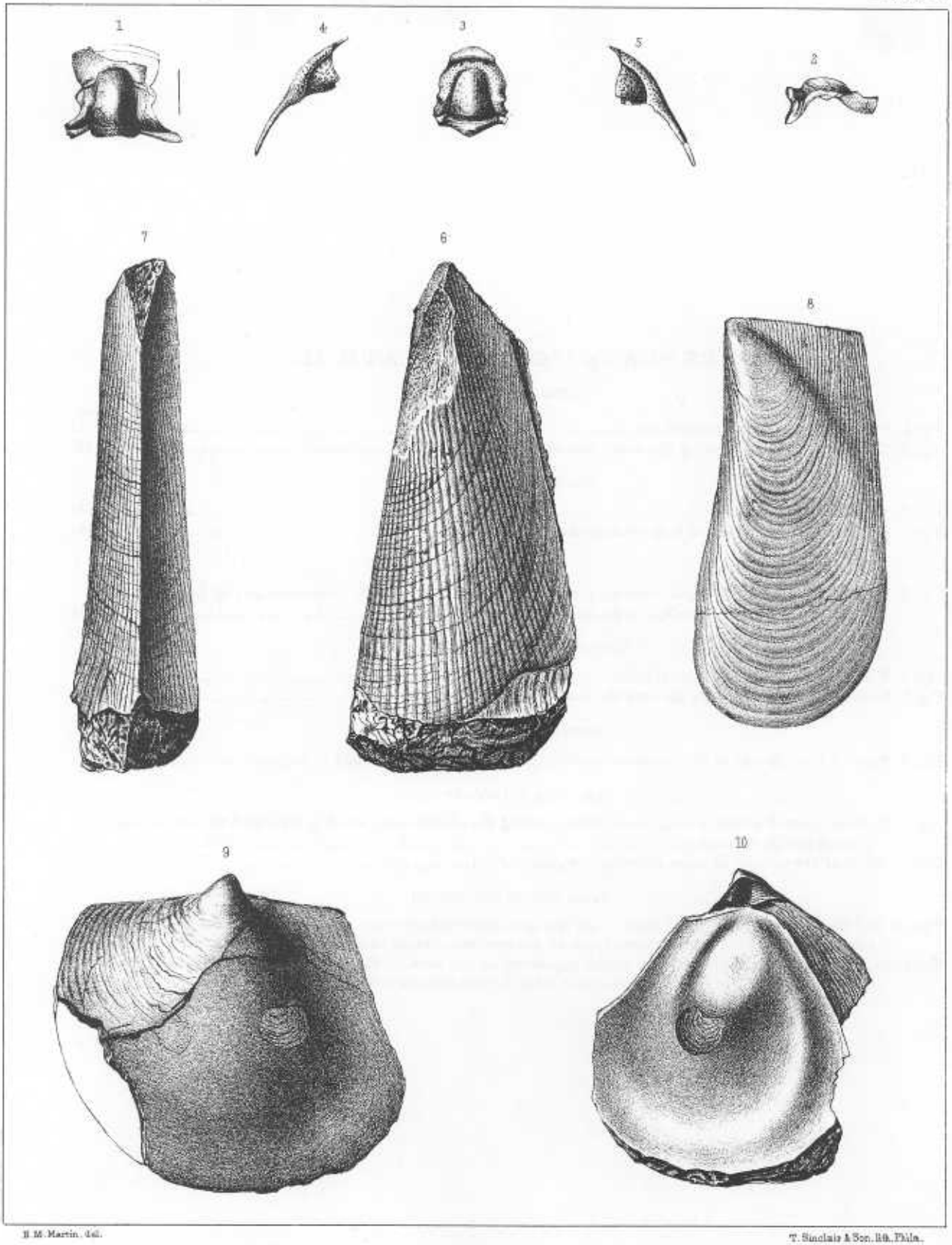
NEW SPECIES OF FOSSILS

Capt. Wm. Ludlow's Exp. to Yellowstone Park, 1875.

Plate I.



E. M. Martin, del.

T. Sinclair & Son, lith. Phila.

EXPLANATION OF PLATE II.

TAPES MONTANENSIS.

SANGUINOLARIA OBLATA.

MACTRA MAIA.

THRACIA (CORIMYA) GRINNELLI.

GERVILLIA SPARSILIRATA.

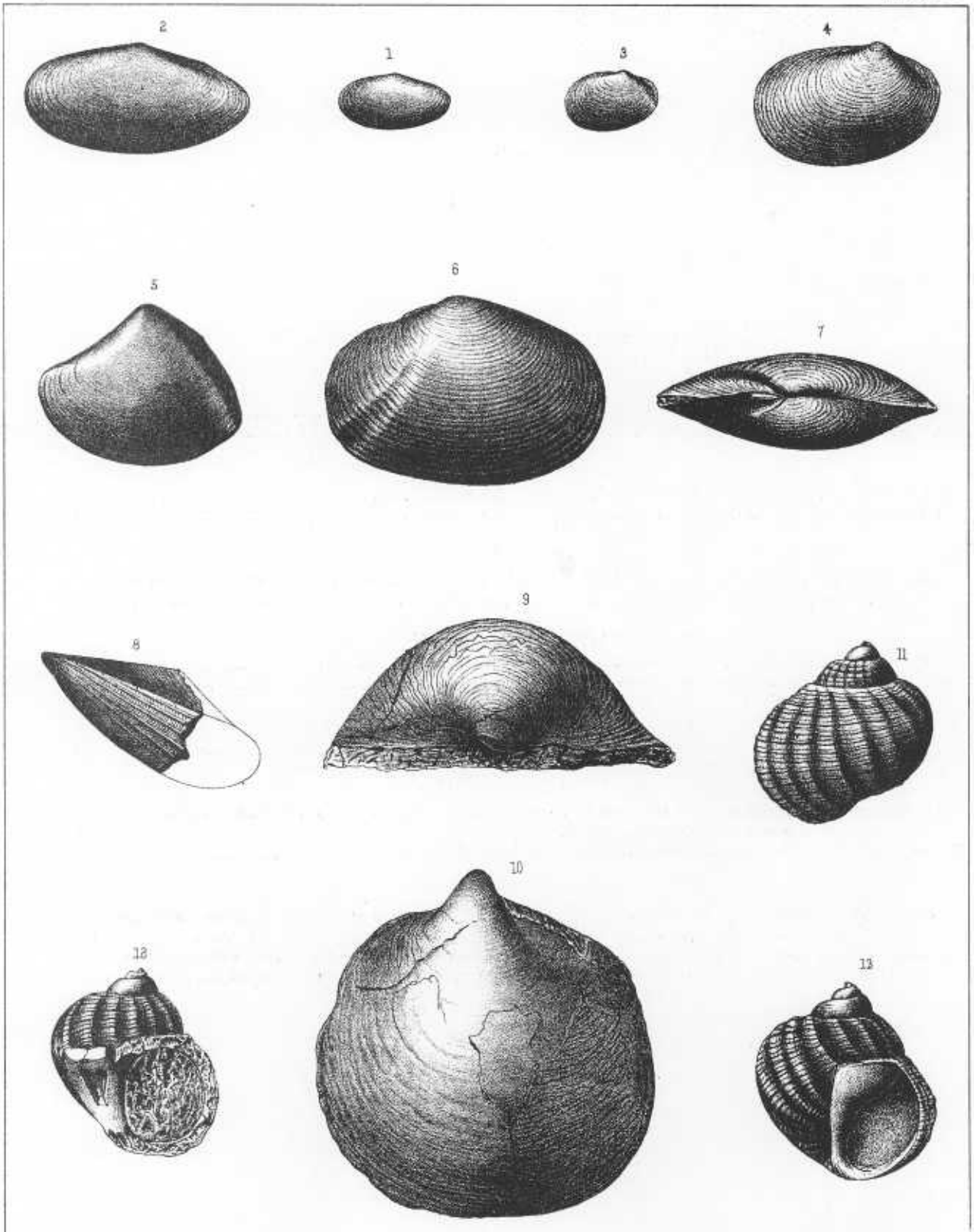
GRYPHÆA PLANOCONVEXA.

VANIKOROPSIS TOUMEYANA.

NEW SPECIES OF FOSSILS

Capt Wm. Ludlow's Exp. to Yellowstone Park, 1875

Plate II



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